

MATH 220 QUIZ #2 (TAKE-HOME)

You may use your book and notes to work on this, but do not work with another student or with a tutor or other mentor. Do not use a calculator.

Find the indicated limits:

$$1. \quad \lim_{x \rightarrow -1} 2x^3 - 4x + 7 = \quad \quad \quad \lim_{x \rightarrow -4} \frac{x+4}{x^2-16} =$$

$$\lim_{x \rightarrow 7^-} \frac{3}{x-7} \quad \quad \quad \lim_{x \rightarrow 7^+} \frac{3}{x-7}$$

$$2. \quad \text{Given } f(x) = \begin{cases} 1, & \text{if } x \text{ is an integer} \\ -1, & \text{otherwise} \end{cases}$$

$$\lim_{x \rightarrow 1/2} f(x) = \quad \quad \quad \lim_{x \rightarrow 0} f(x) =$$

$$3. \quad \text{Given } g(x) = \begin{cases} 1-x^2, & \text{if } x \leq 0 \\ x+2, & \text{if } 0 < x \leq 4 \\ 10-x, & \text{if } x > 4 \end{cases}$$

$$\lim_{x \rightarrow 0^-} g(x) = \quad \quad \quad \lim_{x \rightarrow 0^+} g(x) = \quad \quad \quad \lim_{x \rightarrow 0} f(x) =$$

$$\lim_{x \rightarrow 2^-} g(x) = \quad \quad \quad \lim_{x \rightarrow 2^+} g(x) = \quad \quad \quad \lim_{x \rightarrow 2} g(x) =$$

4. Find the break-even production amount for a manufacturing operation whose cost function is $C(x) = 20x + 320$ when the goods are to be sold for \$15 each.

5. Show all steps to find the value of the slope of the tangent to the curve of the function

$$f(x) = \frac{2}{x} \text{ at } x = 1.$$

What is the function that gives the slope of the tangent for an x on this curve? (that is, the general expression for the difference quotient).